Jadranka Morović-Vergles, MD, PhD and Krešimir Galešić, MD, PhD

Dubrava University Hospital, Department of Medicine
Zagreb, Croatia

REFERENCES

1. Pipinos II, Hopp R, Edwards WD, Radio SJ. Giant-cell temporal arteritis in a 17-year-old male. J Vasc Surg 2006;46:1053-55.
2. Bloch DA, Michel BA, Hunder GC, McShane DJ, Arend WP, Calabrese LH, et al. The American College of Rheumathology 1990 criteria for the classification of vasculitis. Patients and methods. Arthritis Rheumat 1990;33:1068-73.
3. Nordborg E, Nordberg C. Giant cell arteritis: strategies in diagnosis and treatment. Curr Opin Rheumathol 2004;16:25-30

doi:10.1016/j.jvs.2006.06.042

Regarding "Proximalization of the arterial inflow: a new technique to treat access-related ischemia"

Zanow et al[1] have published an important series confirming the role of proximalization of the arterial inflow (PAI) for treatment of the steal syndrome. The operation they describe does not, however, merit the designation "new" (as placed on the Journal cover, the title, and in Dr Fillinger's invited commentary)—only its acronym. The authors acknowledge that Dr Haimov and colleagues[2] reported their serendipitous discovery of the procedure in 1996, but they only speculated on how it improves distal flow. I described a case with hemodynamic detail in an article discussing a flow model for various steal treatments[3] and commented there and elsewhere[4,5] that I use it often to prevent and treat steal syndromes in both the upper and lower extremities. Others have also noted that the operation benefits patients with steal.[6] Furthermore, the operation is hemodynamically identical to the distal revascularization interval ligation (DRIL) procedure, a PAI variant in which the native artery serves as the proximal half of the loop and the conduit used for distal revascularization (DR) serves as the inflow for the distal circulation. In that sense, hundreds of physicians have already used PAI to treat a steal.

Dr Fillinger's operation of distal revascularization without interval ligation (DR without IL), also described previously,[3-5] is technically not PAI, but rather a direct way to improve downstream pressure. Nevertheless, all three operations share an important clinical feature: namely, the more proximal the anastomosis, the greater the relief of the steal. They differ in the role of conduit size: the smaller the interposed conduit for PAI and the larger the conduit for DR without IL, the more flow to the hand; conduit size is not important in the DRIL procedure.

One other point warrants comment. The reason PAI and DRIL work is not because the anastomosis is created on a larger artery with more capacitance, but rather because, in the reconfigured circuit, flow to the hand originates at a point with higher pressure (or voltage, if one is using an electrical model).[3] This simple physiological truth suggests that the acronym PAI should refer not only to the proximalization of the fistula's origin, but also to the origin of flow to the distal extremity, because both are proximalized at the same time. Because the size of the inflow vessel is immaterial to the success of PAI,[3] I have never found it necessary to proximalize an access to the proximal axillary artery. The distal axillary artery has served nicely in each instance.

Wayne S. Gradman, MD

Cedars-Sinai Medical Center
Beverly Hills, Calif

REFERENCES

1. Zanow J, Kruger U, Scholz H. Proximalization of the arterial inflow: a new technique to treat access-related ischemia. J Vasc Surg 2006;43:1216-21.
2. Haimov M, Schanzer H, Skladani M. Pathogenesis and management of upper-extremity ischemia following angioaccess surgery. Blood Purif 1996:14:350-4.
3. Gradman WS, Pozrikidis C. Analysis of options for mitigating hemodialysis access-related ischemic steal phenomena. Ann Vasc Surg 2004;18:59-65.
4. Gradman WS, Cohen W, Haji-Aghaii M. Arteriovenous fistula construction in the thigh with transposed superficial femoral vein: our initial experience. J Vasc Surg 2001;33:968-75.
5. Knox RC, Berman SS, Hughes JD, Gentile AT, Mills JL. Distal revascularization-interval ligation: a durable and effective treatment for ischemic steal syndrome after hemodialysis access. J Vasc Surg 2002;36:250-5; discussion 256.
6. Barone GW, Lightfoot MM, Kumar GV, Eidt JF. Loop-configured upper-arm hemodialysis graft for the "hostile" arm. J Am Coll Surg 2003;197:1053-5.

doi:10.1016/j.jvs.2006.07.050

Reply

I respectfully submit that the article by Zanow et al merits the designation "new." They have reported the first large series with the proximilization of arterial inflow (PAI) procedure, encompassing 30 patients with documentation of mean flow, digital pressures, and clinical outcomes for multiple different access combinations over a mean follow-up of 26 months. The references provided in the letter to the editor include some innovative work with lower extremity access, banding, and a very nice theoretical construct expanding on a similar "electrical circuit" model initially described by David Sumner in 1975.

Despite this, the primary reference to the PAI-type procedure in the letter (Gradman WS, Pozrikidis C. Ann Vasc Surg 2004;18:59-65) is a theoretical construct and the anecdotal report of a single clinical case with no follow-up. The references to other authors are for distal revascularization-interval ligation (DRIL) reports and anecdotal comments on those reports with no data provided. Thus, the report by Zanow et al is novel and provides enough clinical information to incorporate into clinical decision-making.

Regarding other comments, I do not believe the PAI procedure is "hemodynamically identical to the DRIL procedure." Yes, there are hemodynamic similarities, as pointed out in my commentary, but they are clinically quite different, as there is no arterial ligation, which is the point of the report. With regard to "distal revascularization without interval ligation," I made no attempt to state that I invented the procedure. I only used it to point out similarities in the hemodynamic concept for an operation I have personally used.

Finally, the hemodynamic explanation in my commentary is consistent with the "electrical circuit" model for steal. The letter states ". . . in the reconfigured circuit, flow to the hand originates at a point with higher pressure." While a somewhat confusing way to describe it, flow to the hand could not "originate at a point with higher pressure" unless there was less pressure drop across the proximal anastomosis, and this requires a larger inflow artery better capable of handling the flow, as described in the commentary.